

Translation of amended sheets as attached to the IPRP on 19 January 2006

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In principle, the auxiliary support can be designed so as to take over the function of holding the top bearing part at the basic bearing part during the fracture separation process. However, it may be expedient in the case of certain materials and workpiece forms to arrange main supports acting from outside in the fracture separation station, which will resiliently act upon the top bearing part during the fracture separation process.

In principle, the workpiece can indeed be fed directly to the screwing station after the fracture separation process. However, it is provided according to the invention that the basic bearing part and the top bearing part will undergo a release and cleaning process on the fracture plane after the fracture separation process.

Said release and cleaning process can be implemented in various ways.

It is advantageous for the release process to be carried out by vibrating or impacting action. A vibration or impacting device, which catches the top bearing part and brings it in contact with the basic bearing part on the fracture plane in a rapid sequence, can be provided for this purpose in the relevant station. The metal particles generated by the fracture separation process, which are present in loose form on the fracture surface, can thus be removed. This process can be assisted by a blowing, suctioning or brush device.

During the phase of vibrating or impacting action, the top bearing part must be accurately fixed parallel to the fracture plane with respect to the basic bearing part, while at the same time being held in a loose manner vertically to the fracture surface. It is expedient in this regard to provide fixing means having fixing and holding pins which can be inserted into the bores for the screws. During this process, the auxiliary supports are retracted for the

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Patent Claims

1. A method for producing a split bearing arrangement, in which in several machining stations a top bearing part is separated in a predefined fracture plane from a basic bearing part monolithically connected thereto via a fracture separation process by applying force, whereupon the two parts are joined back together by means of a screw connection comprising at least two screws,

the basic bearing part and the top bearing part are fixed on an adapter device that is conveyed from one machining station to another while the top bearing part is retained at least during some processes in the machining stations via a retractable auxiliary support disposed on the adapter device and engaging the top bearing part outside the area of the screw connection,

the basic bearing part and the top bearing part are subjected to a release and cleaning process in the fracture plane after the fracture separation process, and

the location of the top bearing part is accurately fixed in parallel to the fracture plane with respect to the basic bearing part during the release and cleaning process, whilst the top bearing part is held in a loose manner in a direction perpendicular to the fracture plane.

2. The method as according to claim 1, characterised in that the basic bearing part is clamped to the adapter device in all the machining stations.
3. The method as according to claim 1, characterised in that there are main supports acting resiliently upon the top bearing part during the fracture separation process.
4. The method as according to one or more of the preceding claims, characterised in that the release process is carried out by vibrating or impacting action.
5. The method as according to one or more of the preceding claims, characterised in that the cleaning process is carried out by blowing, suctioning or brushing off.
6. The method as according to claim 1, characterised in that a fracture separation groove is incorporated in the fracture plane by a laser prior to the fracture separation process.

7. The method as according to one or more of the preceding claims 1 to 6, characterised in that the screws are inserted and tightened at a predetermined torque after the release and cleaning process.
8. The method as according to one or more of the preceding claims 1 to 7, characterised in that the conveyance of the adapter device to and from the individual machining stations is carried out via a carousel arrangement.
9. A device for producing a split bearing arrangement, in which the workpiece consisting of a basic bearing part (5) and a top bearing part (6) monolithically connected thereto is conveyed at least to a fracture separation station for separating the top bearing part (6) from the basic bearing part (5) along a fracture plane and to a screwing station for joining back together the top bearing part and the basic bearing part by means of at least a screw connection comprising two screws,

a transport mechanism (2) is provided, via which an adapter device (1) supporting the workpiece is conveyed from one machining station to at least one subsequent machining station, with said adapter device (1) being equipped with a retractable auxiliary support (13) which is fixed to said adapter device so as to engage the top bearing part (6) of the workpiece outside the screw connection, and

a release and cleaning station is provided following the fracture separation station, in which

a fixing means (16) is provided for an accurate fixation in location in parallel to the fracture plane and for a loose hold in a direction perpendicular to the fracture plane.
10. The production device as according to claim 9 for carrying out the method as according to claim 2, characterised in that clamping cylinders (9) interacting with counterstops (7, 8) are arranged on the adapter device (1) for clamping the basic bearing part (5) to said adapter device.
11. The production device as according to claim 9 or 10 for carrying out the method as according to claim 3, characterised in that main supports (15) are provided in the fracture separation station, which are brought into resilient abutment against the top bearing part (6) during the fracture separation process.

12. The production device as according to one or more of the preceding claims 9 to 11 for carrying out the method as according to claim 4, characterised in that the release and cleaning station is equipped with a vibration or impacting device (19) which acts upon the top bearing part (6).
13. The production device as according to one or more of the preceding claims 9 to 11 for carrying out the method as according to claim 5, characterised in that the release and cleaning station is equipped with a blowing, suctioning or brush device.
14. The production device as according to one or more of the preceding claims 9 to 13, characterised in that the fixing means (16) comprises fixing and holding pins (17) which can be inserted into the bores for the screws.
15. The production device as according to claim 14 for a screw connection comprising two screws, characterised in that two fixing and holding pins (17) are provided, which are linked together at one end via a yoke (18).
16. The production device as according to claim 15, characterised in that the yoke (18) is connected to a feed cylinder.
17. The production device as according to one or more of the preceding claims 9 to 11 for carrying out the method as according to claim 6, characterised in that a laser station is provided before the fracture separation station.
18. The production device as according to one or more of the preceding claims 9 to 17 for carrying out the method as according to claim 7, characterised in that a screwing station is provided after the release and cleaning station, in which screwing station the screws are inserted and tightened at a predetermined torque via a screwing device.
19. The production device as according to one or more of claims 9 to 18 for carrying out the method as according to claim 8, characterised in that the transport mechanism (2) is essentially designed as a carousel arrangement (21), with the machining stations being distributed about its periphery.
20. The production device as according to claim 19, characterised in that a loading and unloading station, a laser station, a fracture separation station, a release and

cleaning station, as well as a screwing station are provided in the region of the carousel arrangement (21).

21. The production device as according to claim 20, characterised in that the loading and unloading station, the screwing station and the laser station, as well as the fracture separation station and the release and cleaning station are each combined into a double station.